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A cooperative activity in which social scientists and persons in related fields at Mississippi State College and neighboring institutions participate on a voluntary basis. Meetings are held at least three times each semester, and one of the social science departments at the college provides the speaker for each occasion. Announcements of program details appear regularly in the Bulletin.

THE HOOVER COMMISSION AND THE FARMER:

The Significance of the Hoover Report for the Farming Class

by

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Center

During the months which have elapsed since the Hoover Commission released its report and recommendations concerning the executive branch of the Federal government, the everyday citizen has manifested more concern than ever before in the prosaic subject of government reorganization. This interest has not centered alone upon the report of the full Commission, but the numerous Task Force reports on special phases of the subject have also received unprecedented attention, not only from scholars and government officials but also from laymen.

The widespread attention which has thus been given to governmental reorganization may be taken as an indication that there is an unusual awareness on the part of the general public that all is not quiet along the Potomac. Further, it would seem to indicate the extent to which the government, once considered rather remote from the individual, now touches the intimate lives of millions of citizens in all sections of the country.

Among the Americans whose everyday lives are affected by governmental programs, the farmer and those whose interests are closely linked with his find their welfare most vitally influenced by the government and its problems. This is particularly true in areas where agriculture is the predominant industry. Those whose economic system rests primarily upon agriculture should know as much as possible about what the Hoover Commission's Task Force on Agriculture discovered from its survey of governmental machinery through which the government's agricultural program is administered and what it has recommended to improve the efficiency of that machinery.

Major Objectives

What were the major objectives of the Task Force on Agriculture? It is necessary to know these objectives if the findings and recommendations are to be understood properly.

Stated in general terms these objectives as set forth in the Report are two-fold: (1) to develop programs that will safeguard resources and provide the growing population with agricultural commodities at prices which will preserve for agriculture a sound place in the national economy; and (2) to assist farmers to achieve the best land-use adjustment consistent with long-range interests of both producers and consumers.

Primary Elements in the Existing Problem

Having set forth its major objectives, the Task Force listed the basic factors which its study had revealed. Briefly stated, the primary elements in the problem of adjusting the agricultural program and its administering organization are as follows:

1. Expansion of the functions of the Department of Agriculture has led to the establishment of over 20 agencies reporting directly to the Secretary's office, thereby creating an impossible task of management.

2. The Department of Agriculture has grown without sufficient integration of its parts to the whole, so that it is actually a loose confederation of semi-autonomous bureaus with overlapping and duplicating programs.

3. Agricultural activities of the Federal government are largely concentrated in the Department of Agriculture, but there is some duplication and overlapping, especially into the Department of Interior.

4. There is lack of sufficient integration of the field organization. Few agencies have joint or common field headquarters, and the farmer must deal with many separate agencies which often have conflicting policies. The educational function of the Cooperative Extension Service is often by-passed by departmental agencies reaching directly into counties and individual farms.

5. Local farmer committees often fail to function in an advisory and coordinating capacity as intended, but have multiplied in number, their members tending to become local Federal employees of coordinated agencies.

6. There is a need for an organizational structure sufficiently flexible to adjust to changes in public policy without demoralizing personnel and disrupting essential unity.

Proposals for Attaining an Integrated, Flexible Organization

The Task Force on Agriculture proposed a number of changes designed to improve the organization through which the Department of Agriculture could more effectively manage and administer its program. These proposals are grouped into seven principal categories:

1. All activities of the Department of Agriculture should be integrated into eight intra-departmental agencies, namely: Secretary's Office; Research Administration; Extension Administration; Agricultural Resources Conservation Administration; Commodity Adjustment Administration; Regulatory Administration; Agricultural Credit Administration; and State and County Agricultural Councils.

2. The Secretary of Agriculture should be given more top-level assistance by adding two additional assistant secretaries to the existing Under Secretary and his assistant.

3. To reduce the Secretary's "span of attention," those reporting directly to the Secretary would be limited to the following: (a) the six administrators heading the Research, Extension, Conservation, Commodity Adjustment, Regulatory, and Credit Administrations; (b) the Solicitor; (c) the Director of Administration Agencies; and (d) the Director of Foreign Agricultural Relations.

4. Provide an integrated organization by assigning responsibilities to bureaus in the six functional administrations, thus improving management and coordination.

5. Where possible reduce personnel from the present 80,000 employees.

6. Leave procedural detail to be adjusted, free from rigid rules, as the work of the Department progresses.

7. Reduction of expenditures should be left to Congress as a policy-determining function, but much reduction should be possible under the proposed organization.

Major Recommendations

If the proposed changes in organizational structure are effectuated, the Task Force felt that the way would be prepared for other, much broader changes of procedure and management; and, accordingly, it set forth at some length its recommendations for such changes:

1. The administrative latitude of the Secretary of Agriculture should be broadened to enable him to perform his duties wisely, economically, and efficiently.

2. Existing methods of financial reporting should be eliminated, such as combined statements and restoration of capital by cancellation of notes, in order to give a clear picture of the cost of each bureau.

3. Reduce or eliminate the practice of automatically earmarking funds as recurring annual appropriations without an annual reappraisal of the needs for such funds.

4. Further development of Federal agricultural research stations should be limited to cases where existing State or Federal-State facilities cannot fill the need. Careful study should be made to determine disposal of stations or substations doing duplicating work.

5. The Extension Administration should be used by other Administrations to carry educational programs to farmers and the general public.

6. Except for national parks and monuments, military reservations, Indian lands, the T. V. A., and mineral resources, all publicly owned lands should be managed by the Department of Agriculture.

7. National conservation programs should be administered through the Resource Conservation Administration and Extension Administration and the land-grant colleges so as to give farmers adequate technical assistance.

8. Conservation payment to farmers should not be used as income supplements in disguise, but such payments should cease upon completion of a given conservation plan.

9. The commodity adjustment program should be conducted on a stand-by rather than a continuous basis—becoming fully active only in case of urgent need.

10. Consumer health and welfare services involving agricultural products should be combined with similar activities in the Department of Agriculture.

11. Cost of inspection of all agricultural products for protection of the general public should be paid by the Federal government, that for the protection of producers and processors should be paid for by the producers and processors.

12. Public land and wild life management would be better administered through regional offices reflecting relevant geographic factors. Other activities such as services to individual farmers would be better administered through field offices based on the States as units. Use of joint administrative services for all field operations should be the practice.

13. State and local advisory groups are necessary, but the actual administration of programs should be by Federal and State employees.

14. A comprehensive management survey should be made, to follow immediately after completion of organizing the Department of Agriculture as recommended, in order to determine further savings and reductions in staff, agencies, etc. Recommendations based on the survey's findings should be made prior to the submission of the budget estimate for 1951.

Explanatory Comment

Savings. Disclaiming any attempt to estimate with strict accuracy potential financial savings which might be realized by the organizational and procedural changes recommended, the Task Force on Agriculture did indicate the possibility of economy. It was careful to point out that its primary concern was to improve efficiency of operation rather than merely to save money.

The report noted that actual expenditures of the Department of Agriculture, exclusive of reimbursable outlays through the agricultural credit agencies, have increased from $16.7 millions in 1912 to $2,403.2 millions in 1947. Since 1935 such expenditures have almost trebled; and the figures for 1947 do not include many World War II related expenditures. Broadly estimated potential financial savings were as follows:

Specific annual savings in operation	$ 44,320,000
Annual rescissions	135,000,000
Cancellation of authority to create debt	1,750,000,000
Liquidation of capital stock, surplus, and revolving funds of government corporations and agricultural credit agencies	780,472,000
Total annual savings, etc.	$2,709,792,000

The Task Force could not estimate, even in general, annual savings in operations in the activities of the Agricultural Resources Conservations Administration and the Commodity Adjustment Administration—stating simply that operational expenditures of these agencies would be dependent upon national policy as determined by Congress.

Field Establishments. Because of its relatively large personnel and its diversified activities and wide geographic dispersion, the field service of the Department of Agriculture is regarded by the Task Force as of primary importance. The Task Force on Agricultural Activities is in general agreement with views relative to agricultural field services expressed in the report of the Federal Field Offices Task Force. Both task forces recommended that the numerous area administrative offices of the various bureaus of the department be incorporated in departmental regional offices and that their services be made available to the entire Department of Agriculture field service. This would achieve better geographical distribution and should permit material economies as well as improved services.

According to the Report, the present fragmentization of services rendered to farm operators in the field by numerous single-phase agencies should be corrected by consolidations of field organizations or by coordination and integration of all program operations at county, district, state, and regional levels. This would be for the purpose of providing a unified agricultural service needed by farmers in the area served. It was suggested that responsibility for directing the field services of the Department of Agriculture might be centralized in the Secretary or Under Secretary without violating general recommendations made for the organization of the Department.

State and County Agricultural Councils. Of special interest to State officials and employees, land-grant colleges, and county officials and agencies, are the recommendations of the Task Force relative to consolidation and integration of agricultural agencies at the state and local level.

Farmers in general have been concerned over the tendency of the Department of Agriculture to provide for the establishment of local producer committees, often federally employed and compensated, and functioning in effect as local federal officials in connection with Federal governmental programs. Also, farmers and farmer groups have been concerned about the multiplicity of these local committees and their overlapping functions. Likewise, to a great extent, farmers have been concerned at the multiple and often confusing contacts made by Federal agencies through local field employees with individual farmers in carrying out local programs. Regional and national agricultural programs often can be accomplished only if they have the support and active cooperation of people at the state and local level. The judgments and reactions of these people must be considered in formulating national and regional programs.

In order to remedy these conditions and facilitate needed exchange of judgments and information in the formulation and execution of programs, the Task Force recommended the establishment of state and county agricultural councils. A major objective of this establishment would be to integrate and coordinate the functions of agricultural agencies the more conveniently and efficiently to serve the individual farmer.

These proposed state and county agricultural councils would not administer the existing functions of state local agricultural committees in such programs as (1) soil-conservation and changes in land uses; (2) tobacco, corn, wheat, cotton, rice, and peanut county or farm allotments of acreage or marketing quotas; or (3) measuring of farms as to use of excess acreage. Neither would the proposed councils carry out the functions of the federal crop insurance producer committees or beet sugar or sugar cane producer committees. But rather such local committees would be abolished and their functions performed by regular field personnel of the Department of Agriculture, appointed and paid by the Department.

The function of the state and county councils would be to initiate and make recommendations to the Department. Such recommendations would be made directly to the Department, except that those relating to extension programs would clear through the State Extension Service. All recommendations of the county agricultural councils would clear to the Department of Agriculture through the State Agricultural Councils. In this way, it was thought a better integrated and coordinated agricultural program could be achieved, and the number of different agencies which the individual farmer would have to contact would be held to the minimum.

These state and county agricultural councils would be advisory only and would not engage directly in administering agricultural programs. The actual carrying out of such programs would be the responsibility of the regular field personnel of the Department of Agriculture. Except for these advisory state and county councils, there would not be established in any state or county any committees of farmers with Federal functions. The Federal field personnel would, wherever practicable, be jointly housed in the county and be so constituted that, through joint functioning, farmer contacts would be greatly reduced. In all such contacts the regular field personnel in any county would consult with the county agent and keep him advised.

The State Agricultural Council would be composed of (a) four ex officio members, the State Secretary of Agriculture or corresponding official, the Director of the State Agricultural Experiment Station, the Director of the State Agricultural Extension Service, and the head of the State Conservation Department or corresponding official or the designee of any of these; and (b) eight farmer members elected by the chairmen of the county agricultural councils.

A specified number of farmer members elected by farm owners and tenants of local administrative units within the county would compose the County Agricultural Council. Members would be elected annually for a 4 year term in such manner that the terms of one-fourth of the members would expire each year. Members would not be eligible for immediate re-election.

It was suggested by the Task Force that there might be created, at the request of the county council, an interagency committee composed of local representatives designated by each Federal agency conducting programs in the county. Such interagency committees would assist the county council as requested and would present to the county council such matters as might need consideration.

Conclusion

The foregoing is not an attempt at a thorough analytical study of the Report of the Task Force on Agricultural Activities. It is merely a descriptive review of certain major features of the Report. No attempt has been made, for example, to give attention to the Task Force's findings and recommendations regarding financial administration of the Department of Agriculture's program. This is a highly technical subject, and lies outside the scope of this review.

It should also be noted that the Hoover Commission's Final Report, while in substantial agreement with the Task Force Report, varies from it in certain respects. The Commission's Final Report made the following general recommendations regarding agriculture:

1. Transfer to the Department of Agriculture the Interior Department's Bureau of Land Management (except mineral functions).
2. Transfer food inspection activities from the Food and Drug Administration.
3. Reorganize the Department internally by allocating the various functions of the Department to the following services: research, extension, agricultural resources, conservation, commodity adjustment, regulatory, agricultural credit, and rural electrification.
4. Liquidate the Farmers Home Administration and transfer its activities to a government corporation to be set up under the Agricultural Credit Service.
5. Consolidate the following agencies into a single mutual credit system: (a) Federal Intermediate Credit Banks; (b) Banks for cooperatives; (c) Production Credit Corporations.
6. Replace all Federal agricultural committees and boards by one state council in each state, and one county council in each agricultural county.

Although a brief review such as this may have some value as an aid in acquiring a general idea of the problem and the Task Force's approach to it, one who wants to delve deeply into the problem of agriculture and its administration

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WATER RESOURCES OF MISSISSIPPI

by

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Department of Resource-Use Education

The recent water shortage in New York has served to focus attention on the importance of water in our economy and to emphasize the necessity of taking timely measures to provide an adequate supply. In California and in some New England communities water has become the limiting factor in further industrial growth. Unlike these areas, Mississippi has not experienced sufficient industrialization and concentration of population to feel the need for conservation measures to provide adequate quantities of water. On the contrary, our people have been preoccupied with the problems of flood control, erosion, power, drainage, and navigation. Although these problems may appear to be unrelated, it is impossible to deal separately with each element because the control and utilization of water has many ramifications. Consequently, we cannot afford to ignore the necessity of examining the total situation so that our people may avoid the mistakes which have been costly in Mississippi and in other states and take action to solve the water problems of the state.

Distribution of Water Resources

Ample water to meet immediate needs is found in every section of the state, but there are considerable variations in the amount of precipitation and in quality and quantity of surface and ground water. Average annual precipitation ranges from 48 inches in DeSoto County to 65 inches in George County. Generally speaking, the southern part of the state has more rainfall than the Delta and North Mississippi. Furthermore, South Mississippi has a more nearly uniform distribution of precipitation throughout the year. Precipitation is usually heavier during the winter and spring months, but adequate moisture for most crops is available throughout the state during the summer.

Although precipitation is the source of both ground and surface water, it is necessary to examine the geology of the state to understand the total picture. Areas which have high rates of runoff and impenetrable subsurface structures tend to be drier than those regions which are more nearly level and have good aquifers. Rivers, lakes, and other surface supplies are alsosignificant as sources of water for municipal and industrial use, navigation, and other purposes. Inasmuch as South Mississippi has a favorable combination of all these factors, it has the largest supply of water in the state. Other areas which have ample water resources to permit considerable industrial expansion are the Delta and the adjacent hill counties, the Jackson Prairie, and the southern part of the Black Prairie Belt. On the other hand, the Pontotoc Ridge and the northeastern and north central hills do not have sufficient water to meet the needs of industries which require large amounts of this resource.[1]

Types of Water Resources

Mississippi has 189,000 acres of inland or surface water.[2] Although this acreage is relatively small, it embraces many different types of surface water. In addition to the rivers and creeks, the state has a number of natural lakes in the Delta, several artificial lakes scattered among the state parks, and two large storage reservoirs on the Yazoo watershed.

There are five major interior drainage basins: (1) the Tombigbee Basin which drains the northeastern highlands and the Black Prairie Belt, (2) the Pearl River Basin which is located in the central and south central areas of the state, (3) the Pascagoula River Basin which occupies most of the southeastern portion of the state, (4) the Yazoo River Basin which embraces the Delta and two-thirds of North Mississippi, and (5) the Black River Basin which extends southeastward between the Yazoo and Pearl River basins. Several minor watersheds supplement these major interior streams, but they are of less significance in the total pattern.

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1. Mississippi State Planning Commission, Progress Report, State Planning in Mississippi, 70-81.
2. Highsaw, Robert Baker, Mississippi's Wealth, A Study of the Public Administration of Natural Resources, 2.

Three major bodies of water form natural state boundaries on the northeast, south, and west. A portion of Tishomingo County adjoins Pickwick Reservoir on the Tennessee River, a navigable stream. The entire western boundary of the state is formed by the Mississippi River. Eighty-two miles of the southern boundary is a part of the Gulf of Mexico coastline. Gulfport is the major harbor on the Mississippi coast, but Biloxi and Pascagoula also have facilities for small craft.

Every section of the state has sufficient ground water supplies to satisfy present domestic needs, but there are vast differences in the quantity and quality of ground water in the various parts of the state. Although the water table has fallen in some congested areas and artesian flow from some wells has declined or ceased, no serious shortages have developed despite the fact that most Mississippi municipalities depend upon ground water for both domestic and industrial needs. However, it should be remembered that the areas in which large quantities of artesian water are available for industrial uses are limited to the Black Prairie Belt, the northern Loess Bluffs, the Jackson Prairie Belt, the Mississippi Alluvial Plain, and South Mississippi.[3] The northeastern highlands and the north central hills do not have suitable aquifers near the surface to produce adequate quantities of water at low cost for industries which require large amounts of ground water.

Water is a compound of hydrogen and oxygen, but that is only a partial truth. As water percolates through the ground, it dissolves minerals in the soil and in the rocks. Excessive quantities of these substances affect the quality and usefulness of ground water and of the water in small streams and springs which are fed by ground water. Although pronounced quantities of some minerals may be desirable for resorts which advertise their mineral waters, the same qualities are not wanted by industries. For example, hard water forms a scale which reduces the efficiency of boilers. Mineral analyses of water from wells indicate that the Coastal Area is particularly fortunate in that the ground water of the region is extremely low in total hardness.[4]

Utilization of Water Resources

Water plays such a significant and diverse role in modern civilization that people are rarely cognizant of the many demands that are made upon water resources and of the multitude of complex problems which are associated with utilization of this gift of nature. Until the disastrous flood of 1927, no large scale collective action was taken to prevent costly inundations. Previously, our action was much like that of the man who delayed repairing his roof because it was too wet when it rained and there was no need for a good roof when the sun was shining. Even today, in many areas of the state, we have not taken effective action to reduce flood crests. On the other side of the scale, complaints are made by farmers that their croplands are drier than they were several years ago and that pumps are needed on wells that formerly flowed freely. These shortages and floods are related and stem from the same root—the misuse of water resources.

Although it may seem somewhat trite to list the uses of water in the economy of Mississippi, a brief summary will set the stage for a discussion of the problems associated with utilization. In addition to the familiar uses in the home and office, water is used by the general public for fighting fires, disposal of sewage, and recreation. Industry requires water to process raw materials and fabricate finished goods, cool plant machinery, air condition buildings, dispose of waste, generate power, and extract sand, gravel, and other products. Farmers use water for livestock and to grow their crops. Transportation firms haul freight and passengers on the waterways. Water is the habitat of many species of wildlife. Indeed, no form of life can exist without water. The average person in American cities uses more than 100 gallons of water per day and the requirements of industry run as high as five or six per cent of the entire municipal supply in some cities.[5]

Although competitive demands and misuse of water supplies have caused inconvenience and temporary shortages in a few areas of the state, the major water problems of Mississippi are associated with flood control, drainage, pollution, erosion, and navigation.

Floods occurred along major streams even before the white man denuded the landscape of natural cover and turned both the hills and the plains into cropland, but man's destruction of the forests, his failure to check erosion, and his insistence upon using natural flood plains for crops and building sites have aggravated the problem of water control. The disastrous Mississippi River flood of

3. Mississippi State Planning Commission, op. cit. 84.
4. Brown, Glen F. and Others, Geology and Ground-Water Resources of the Coastal Area of Mississippi, Mississippi State Geological Survey Bulletin 60, 69-83.
5. Gustafson, A. F. and Others, Conservation in the United States, 72-73.

1927 and the North Mississippi floods of 1948 resulted in the public's demanding flood control measures. The levees, cutoffs, and channel improvements on the Mississippi River, which were made under the direction of the Mississippi River Commission by authorization of the Congress, have alleviated the problem along the main river, but floods are still common in the watersheds of the inland streams. While these measures are feasible where the value of property is greater than the cost of the projects, the runoff is not excessive, and the terrain is such that levees and channel improvements are practicable, similar projects would be prohibitively expensive and relatively ineffective in other areas of the state. For example, the Delta is a rich farming area which is of greater worth than the costs of extensive levee and channel improvement projects. On the other hand, the narrow east flood plain below Vicksburg is not valuable enough to justify the costs of levees for flood protection. In some areas of the state excessive runoffs necessitate revegetation of eroded watersheds and construction of storage reservoirs. Experience has demonstrated that no single measure will prevent floods along the Yazoo and the Tombigbee. The combined storage capacity of the Sardis and Arkabutla reservoirs on the tributaries of the Yazoo River reduced the crest of the 1948 flood at Greenwood only one foot—a relatively small amount.[6] In the northeastern hill sections of the Tombigbee watershed the runoff is equal to 67 per cent of the annual precipitation.[7] No feasible system of storage reservoirs and levees can prevent all floods along the Tombigbee. Therefore, it is essential that control measures be based upon a careful study of all the factors which contribute to inundations and that proposed projects deal effectively with each of the causes that are within the bounds of human action. However, we should recognize that absolute flood prevention is neither sound economically nor possible in every watershed and that we must either use the natural flood plains for forests and wildlife or reconcile ourselves to occasional inundations.

Reduction of runoff through the use of vegetation and other conservation measures is essential to effective control of water in any watershed. Failure to recognize this basic fact is costing the people of the United States billions of dollars annually in expensive engineering works, silted reservoirs and stream channels, eroded farmland, and damaged city property. By reforesting abandoned and cutover steep hillsides, establishing thick cover crops of grasses and legumes on moderate slopes, and contour cultivating row crops on slight grades, more water soaks into the ground, less water rushes into the streams, silting of reservoirs and stream channels is reduced, the amount of stream flow is more evenly distributed throughout the year, ample ground water is available for crops and domestic use, and flood crests are reduced. Thus, the wise use of vegetation and other measures to reduce runoff helps in the solution of a multitude of water problems including flood control.

Flood control can be made effective only through a coordinated program embracing the entire watershed of a major stream and its tributaries. Local piecemeal efforts are expensive, rarely achieve the desired ends, and frequently complicate the water control problems of other communities downstream. This has been demonstrated conclusively in the Delta where small drainage districts often contributed to the flooding of adjacent lands in other districts and streams flowing through the adjoining hill areas overflowed land in the alluvial plain.[8] The success of the Tennessee Valley Authority in controlling floods along the Tennessee River has been achieved through dealing with the entire watershed as a unit.[9] It is highly improbable that the Tombigbee and other major interior streams can be controlled without resorting to similar measures in their watersheds. A recognition of this principle has led to a coordinated program in the Yazoo Basin which should reduce flood crests and save thousands of acres of valuable cropland from periodic inundations.[10]

Several small areas of the state are confronted with drainage problems, but the Delta is the only large section of the state that faces particularly complex engineering difficulties. This natural flood plain is protected against overflow from the flood swollen Mississippi River by a mainline levee system except in the lower counties near the mouth of the Yazoo. Land in the triangle formed by the junction of the Yazoo and Mississippi Rivers is subject to frequent inundations because the Yazoo cannot discharge its load through the gap in the main levee when the larger river is at or near flood stage and water from the Mississippi River pours through the opening. Consequently, water from both streams spreads out on the adjacent low lands behind the levee. Natural drainage of the Delta is toward the east into the Yazoo, but the slope is very slight which makes the streams extremely sluggish. Many of the tributaries of the Yazoo originate in the north-

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6. Anderson, Irving E., North Mississippi Floods of February 1948, Mississippi State Geological Survey Bulletin 66, 5.
7. Mississippi State Planning Commission, op. cit.,88.
8. Ibid., 95.
9. Evans, Everett F. and Donahue,Roy L., Our South, Its Resources and Their Use, 248.
10. Highsaw, Robert Baker, The Delta Looks Forward, 71-76.

western and north central hills which form the land boundary of the Delta. Inasmuch as runoff in the hill sections is extremely rapid and the volume is very great, the Yazoo is often unable to carry the water from the tributaries and much land is subject to overflow and deposition of silt, sand and gravel from eroded hill land. Under these conditions, the interior drainage ditches and streams are unable to discharge their burden rapidly enough to remove the normal runoff from precipitation. Therefore, many rich Delta acres are flooded by precipitation on Delta soil when the Yazoo and its tributaries are full. It has been estimated that 15.5 per cent (625,120 acres of which more than half is suitable for cultivation) of Delta land is subject to frequent overflow.[11] The preceding discussion makes it obvious that the problem of interior drainage in the Delta cannot be solved without controlling the volume of water which rushes down from the hills. Three projects of the Mississippi River Commission are underway which should reduce flood crests and improve interior drainage in the Delta area.[12]

The hill sections of the state bear impressive scars produced by water erosion. A million acres of land has been so severely damaged that it is worthless and nearly two-thirds of the farm land in the state has suffered moderate to severe erosion. Thousands of families and hundreds of communities in the hills have been impoverished by the loss of fertile topsoil. Even the farmers on the flood plains and the gentle slopes have not been spared because many fertile acres have been damaged by silt, sand, and gravel which were carried down from the hills and deposited on the lowlands. Inasmuch as the natural cover has been removed from most of the hillsides and man has not substituted effective soil conservation measures, the rate of runoff is very high—especially after hard rains which are frequent in most of the state. Few people are aware that doubling the speed of water multiplies its cutting power by four and multiplies the weight of separate soil particles it can carry by 64.[13] Although our people are becoming more conscious of the need for erosion control and are adapting more effective measures, water is still taking a large annual toll from the soil of the state. Population pressure on the land in the hill areas, lack of knowledge concerning scientific land use, inadequate funds to defray the costs of better practices, and absence of markets and market facilities for new farm products are still the major social and economic problems which are closely associated with soil erosion. Various public agencies are helping farmers solve these problems and significant progress has been made in the last fifteen years. However, the people as a whole are unaware of the relation of water control on farm land to their own prosperity. Consequently, there are only a few examples of united effort to solve the common problem of water erosion. Revegetation, contour cultivation, and strip cropping of sloping land are essential measures which should be adopted more widely to reduce runoff, decrease flood crests, and minimize soil losses.

During recent years the interest of the public in navigation has been revived and several organized efforts have been launched to promote improved navigation facilities on the major interior streams of the state. The proposed projects include the Pat Harrison Waterway which would provide a channel from east central Mississippi to the Gulf along the Pascagoula and its tributaries, the Tombigbee River and canal link of a Tennessee River to the Gulf waterway, and numerous channel improvements in the Yazoo and Pearl Rivers. Several studies have been made by the Army Engineers to determine the feasibility of proposed projects. In several instances, it was discovered that the utility of the improvements did not justify the costs.[14] However, it should be remembered that the wisdom of using public funds for navigation improvements is an extremely complex controversial subject. Proponents contend that the costs are more than offset by savings in freight rates and by subsequent industrial development along the improved channel. On the other hand, some authorities contend that it is a wasteful and useless form of subsidization.[15] In view of these conflicting opinions, the public should be cautious about supporting special interest groups who lobby for federal appropriations to promote expensive local projects. When navigation improvements are coupled with other closely related projects such as flood control, power, and water supply, they are more frequently justifiable.

Although the Mississippi River does not carry as large a volume of freight as it did before the Civil War, many nonperishable products are still transported by water. Steel barges propelled by fast towboats have helped to revive the river traffic. Unwillingness of the carriers to accept less than barge-load shipments has probably limited the tonnage which might be transported by water. Several river towns lost their main source of revenue when river traffic declined in the last century, but Greenville continues to hold its position as a major river port.

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11. Highsaw, op. cit., 12.
12. Ibid., 71-73.
13. Gustafson and Others, op.cit., 93.
14. Mississippi State Planning Commission, op. cit., 88-100.
15. Gustafson and Others, op. cit., 62-65.

Gulfport, Mississippi's chief harbor on the Gulf of Mexico, is expanding its port facilities by constructing an additional modern concrete pier with fireproof warehouse facilities. The rapid industrialization of South Mississippi, the possibility of expanding the Latin American market for Southern products, and the importance of the Gulf fisheries have been major factors in stimulating expansion of harbor improvements and port facilities along the coast. Although it is improbable that a Mississippi port will be able to attain the importance of Mobile, New Orleans, and Galveston, it seems quite likely that Biloxi, Gulfport, and other cities on Mississippi Sound will continue to increase their incomes from the use of the Gulf waters for recreation, fishing, and shipping.

It has been mentioned that the people of Mississippi have not felt the need for water conservation measures. However, there is unmistakable evidence that some localities are courting higher rates and others are likely to suffer inconvenience because wasteful practices are being pursued. Reports of the State Geological Survey indicate that many flowing wells must now be pumped because the wells were allowed to flow unchecked and a large number were not cased properly.[16] In the hill areas of the state, the rate of recharging the aquifers is being reduced by rapid runoffs which decrease the quantity of water that soaks into the ground. Consequently, many small streams no longer flow during the late summer and autumn and aquatic plants and fish have disappeared from a large number of these streams. A recent study summarizes the current situation by stating that "while it is not yet an urgent problem, water conservation requires continued study."[17]

Pollution did not become a major water problem in Mississippi until recently. During the last two decades there has been a substantial increase in the number of industries and in the percentage of the population living in cities and towns. Consequently, it has been necessary to adopt measures to protect public health and prevent the destruction of aquatic life. The prosperity of both fresh water and salt water fisheries, particularly, the oyster beds along the shoreline of Mississippi Sound, is dependent upon uncontaminated water. Industrial wastes and sewage could wipe out the oyster beds in a very brief period of time. In 1942, the state legislature enacted a measure which charged the Game and Fish Commission as being among the best in the United States.[19] However, the exemption of municipalities from provisions of the law on pollution is an outstanding defect because cities are among the worst offenders in the state.[20] Stream pollution is still a problem in the Tombigbee, Pearl, Pascagoula, Big Black, and Yazoo River basins.[21]

Administration of Water Resources

In a study published in 1947, the administration of the state's water resources was summarized in the statement that "Mississippi has long suffered from the lack of comprehensive water planning and coordination of the operation of various units concerned with water resources.[22]

In Mississippi there are, in addition to the constitutionally created Mississippi River District and the Yazoo-Mississippi Delta Levee District, more than 100 local drainage and levee districts operating in the Delta area. The current activities of the local agencies are concentrated in the fields of proposing flood control works, of representing the localities in negotiating for projects to be constructed by federal agencies, and of maintaining both federal and local construction.[23] The other state and local agencies involved in the administration of water resources include the State Game and Fish Commission and the State Board of Health which are responsible for the control of stream pollution, the soil conservation districts that are concerned with revegetation of watersheds and the reduction of runoff, and the State Geological Survey which is making studies of the nature, location, and extent of Mississippi's water resources.

Two federal agencies are closely connected with the state's water resources. The Mississippi River Commission, an agency under the control of the Department of the Army, plans projects, executes contracts for construction, and supervises the major improvements along the main stream and the chief tributaries. The United States Geological Survey in cooperation with the State Geological Survey conducts surface and ground water investigations in the state to ascertain the quality, availability, and utility of the water resources. These studies are useful to industries which depend upon large quantities of water for manufacturing.

(Continued on page 22)

16. Mississippi State Geological Survey Bulletins 60 and 65.
17. Highsaw, op. cit., 22.
18. Ibid., 23.
19. Mississippi Game and Fish Commission, Mississippi's Wildlife Conservation Program, (mimeographed), 11.
20. Ibid., 11.
21. Highsaw, op. cit., 3.
22. Ibid., 3.
23. Ibid., 20.

THE COW IN THE FRONT YARD

Teaching Agriculture at Mississippi A. & M. College

by

JOHN K. BETTERSWORTH

The history of the agricultural curriculum at Mississippi A. and M. College begins with a parable. When the cattle lot and barn were located, there was considerable chagrin among the elegant because of the fact that the activity in question was placed on the main highway directly across from the front of the academic building and the dormitory. To the complainers, Col. W. H. Montgomery had an unanswerable retort to the effect that the Jersey cow "belongs in the front yard."[1] Those who in years to come derisively spoke of the "cow college" were actually more truthful than poetic, for in the early years the agricultural course—cows and all—was the prime concern of the president, the trustees, and most of the patrons of this fledgling among colleges.

The fact that Lee was a self-admitted failure as a planter was certainly not in his favor when he undertook to guide the A. & M. College in the creation of its agricultural course. In fact, among those who stood to scoff, predictions of another failure were legion. But Lee did have to his credit the fact that he gave up farming with his boots on, that he was perturbed enough about the whole matter of the dire condition of the agricultural interests to set about finding a way out even before he ever dreamed of becoming the president of an agricultural college. It will be recalled that Lee held with a number of adventurous souls of his day that not everything north of the Mason and Dixon line was Abolitionists, Carpetbaggers, and Usurers. He was convinced that the South could, so to speak, take a leaf out of the Northern book—preferably its bank book, for the South was in dire need of Yankee capital. But Lee also wanted Northern people themselves to come South and cast their lot with their destitute brothers. Furthermore, he was certain that Southerners could well afford to learn some new ideas from the Northern book; and here it was to the Mid-and Northwest that Lee turned for guidance. "We have to introduce the improved machinery of the Northwest," he was telling Mississippians in 1881, after a visit to that area.[2]

Lee was certainly no enemy to the economic reconstruction of the South along Northern lines. Not that he was a slavish imitator or a blind follower of Northern leadership. No Confederate Veteran who was to end his days as the commander of the U. C. V. could ever bow the head to that extent. But Lee was aware of a new force in the South in his day, championed by such able writers and orators as Henry Grady and labelled the "New South Movement." Family scrapbooks evidence the fact that Lee not only read but clipped, underlined, and doubtless repeated to the students under his tutelage many of the printed speeches and writings of Henry Grady. The New South leaders would bring diversification, scientific agriculture, and industrial and mechanical progress to the destitute South, even if such a program meant bringing the Yankee along, too. At any rate, it was a Northerner, Robert Gulley, that Lee imported to Mississippi as the first professor of agriculture, and this he did in spite of criticism from some who felt that "a large number of capable instructors in our State" were being overlooked "for the purpose of giving the chairs . . . to Northern teachers."[3]

Professor Gulley was distinguished by his Yankee brogue and his bay mare, with both of which the undergraduates soon came to associate him, as students will. Dr. W. A. Evans recalls Gulley as more or less of a textbook agriculturist, and there is little doubt that at first Gulley must have had to feel his way somewhat in adapting to Southern fields whatever practical agriculture he had learned in the North. Of one thing he was firmly convinced; that King Cotton needed dethroning. In this conviction Gulley had the strong support not only of the President but also of the Starkville member of the board, Col. W. H. Montgomery, who had long been an ardent promoter of livestock and dairying as opposed to cotton.

Montgomery had been one of the first Mississippians to see the value of the cow. One of the distinguishing features of his antebellum plantation was a cattle barn, built in the fifties; and by 1860 he was importing cows from the Isle of Jersey. Montgomery had wisely observed that the limestone soil of the prairie section in which the college was located grew nothing so well as weeds—weeds that could be a "benediction of nature" to the harrassed cotton farmers should they but

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1. Annie M. Hammons, A History of Dairying in Oktibbeha County, MS Thesis (Miss. State, 1948), 23.
2. Jackson Weekly Clarion, June 16, 1881.
3. Jackson Weekly Clarion, July 21, 1880.

change their allegiance from cotton to the cow. A veritable Johnny Appleseed, Montgomery would travel about over Oktibbeha County in his buggy, scattering grass and clover seeds as he went, "along the roadside, in the fence rows, and in the meadows."[4] Some were convinced Montgomery was a crank; in fact, there were those who thought he ought to be committed, or at the least driven out of town. But with singleness of purpose he went right on. Like Lee, he wished to encourage immigration from the North, actually bringing some "Yankee" families to Oktibbeha County, where he helped them set up a Northern Presbyterian Church, which he, himself, joined.[5]

Montgomery was not one to leave any stone unturned. In 1875 he established the Southern Livestock Journal at Starkville. In 1878 he did more than any other man perhaps to have the college located at Starkville. Then, just as he had taken Oktibbeha County under his wing, as "local trustee" and a member of the executive committee of the board, he brooded over the college, seeing to it that the agricultural school he had brought to his own community would be a success. Also, on October 5, 1880 Montgomery was placed on the board's agriculture committee, where he was able to take a personal interest in the tilling of the college soil.[6]

Always aware that he was under the watchful eye of Lee and Montgomery, Agriculture Professor Gulley felt himself under the close scrutiny of the farm population of Mississippi, particularly the Grange. After all, Gulley's work was merely that of doing within academic walls what men like that ubiquitous Grange lecturer, Put Darden, had been doing for years all over the state. In fact, it was to be only a matter of months before the Grange pattern would be adopted by the college in the form of farmers' institutes, where faculty members took their lectures out into the grassroots areas.

At first, however, Gulley was concerned with setting up on the campus the experimental farm that the legislature had prescribed. As superintendent of this farm, Gulley seems to have depended much upon Captain W. B. Lucas, the college steward, who had been a planter in Noxubee County. The land that had to be used for farming purposes was extremely poor, badly cut by gullies, and overgrown with brush. As a writer in the Planter's Journal remarked, the site must have been selected "to show what could be done by farming on the poorest and most worn-out and washed lands in the State."[7]

Student labor did not make much headway in struggling against this poor soil before the spring of 1881. Nearly everything had to be done by student labor, even the construction work on the farm buildings. Some additional non-student help was used, however, particularly in digging ditches on the "wetter portions of the farm," in building fences that were "two miles and more from the buildings," in harvesting crops that would otherwise have been lost, and in carrying on work during vacation times."[8] As we have seen, in 1882 the original 842 acres of farm land were increased by the purchase of 844 additional acres lying across the railroad to the southwest of the main college buildings, thereby providing more adequate facilities for farm work.[9]

Preaching the gospel of diversification by example as well as precept, Gulley set about equipping the farm so as to "illustrate in a business way the work of growing and preparing food for stockgrowing, dairying, the breeding and raising of several breeds of stock, cultivation of crops by improved machinery, etc., employing the students in various ways to make them familiar with the general plan and details of all the work."[10] Poor as the college treasury was, Gulley insisted upon the purchase of mechanical equipment of advanced design on the grounds that successful farming inevitably meant the use of machinery to the exclusion of hand labor wherever possible. Here Gulley had the solid backing of General Lee, who had come back from a visit to the Northwest in the summer of 1880 inspired with the gospel of mechanized farming. "Our hands," he said, "are all that are left to us, and the future prosperity of our State depends upon making those hands profitable. The present generation cannot do this, but their sons have got to do it; they have got to bring brains and education to bear upon Agriculture; to get the greatest amount of work with the smallest amount of labor. We have to introduce the improved machinery of the Northwest . . . ."[11]

Lee's and Gulley's arguments for labor-saving machines could well have been written last week instead of in the last century; for not until the most recent times have Mississippians really conceived of farming in terms of the sort of mechanical revolution these two men dreamed of. Gulley likewise determined to cultivate not merely the good land but all of the land—whole fields at a time—

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4. Annie R. Hammons, Dairying in Oktibbeha County, 21.
5. Ibid., 22.
6. Minutes of the Board, October 5, 1880.
7. Southern Livestock Journal, July 23, 1885.
8. Biennial Report, 1883, 28-29.
9. Ibid., 29.
10. Idem.
11. Jackson Weekly Clarion, June 16, 1881.

in line with the practice of the machine age in agriculture. At first there were those who felt that any attempt to use the vast expanses of poor land to which the college had fallen heir would invite disaster; but in 1885 Lee was ready to boast that in this case a purse had been made out of a sow's ear, for the college had shown how "our worn out lands can be reclaimed and made remunerative under skillful, simple treatment."[12]

Despite the lack of funds and equipment for extensive experimental work, Gulley made use of the materials at hand in a skillful way. After all, what he had to work with was depleted cotton land; so he set about determining "the cheapest and most permanent plan of renewing the fertility of worn-out lands." General Lee was especially anxious to use cotton seed for this purpose, and on October 5, 1880 the board of trustees authorized the purchase of 10,000 bushels of cotton seed for fertilizer.[13]

Gulley also conducted tests in the feeding value of cotton seed and its products, in the most desirable forage crops for the Mississippi climate, and in the most desirable grasses for that area, together with the "best method of securing a stand of the same." Recuperative crops were of special concern, with only a moderate amount of "application of manures and fertilizers." Not having followed the customary method of testing various fertilizers on small plots, Gulley sarcastically noted that such experiments could furnish "no tables of astonishing results." In fact, he boasted that some fields increased in productivity by fifty per cent without the use of any manures. "We are working on larger areas, and on land that would not produce profitable crops," he said. In other words, he was facing the problem of Mississippi planters impoverished both in money and land; therefore it it would be necessary to discover a pinchpenny method of rebuilding the soil.[14] In addition to his experimentation with cotton seed as fertilizer Gulley began in the summer of 1881 a test in recuperative crops by planting a large portion of his poor land in cow peas.[15] In November, 1882 Lee was boasting to the press of the success of the cow-pea experiment as a demonstration of "what every farmer in this State who has not the capital to buy fertilizers can do in improving his lands."[16] Meanwhile, commercial fertilizers were not being neglected, and Lee pointed out that experiments were being made on a small scale in their use on the various crops grown in Mississippi. Moreover, as we shall see, the Department of Chemistry had by this time been charged by the legislature with the testing of all commercial fertilizers sold in the state, thereby becoming no less interested in the soil-replenishment program than the college Agriculture Department.[17]

Aside from the experimentation conducted under Gulley, the college maintained "the farm" for strictly local purposes; the feeding of the student body, and the selling of produce to the college community or of improved varieties of seed to the farmers of the state. It was hoped that from the proceeds much of the student labor costs might be met, but Gulley was far from optimistic. Pointing out that the sort of labor needed on the farm could be procured more cheaply elsewhere, he stressed the fact that in reality such a labor system should be classified with professors' salaries and the like "for its advantages are educational and somewhat costly."[18]

The crop in 1886 was 75 acres of corn, yielding 1800 bushels; 30 acres of cotton, yielding 14 1/2 bales; 60 acres of oats, yielding 1350 bushels; 30 acres of ensilage, yielding 200 tons; 20 acres of corn fodder, yielding 70 tons; 50 acres of clover and hay, yielding 90 tons; 40 acres of peas and forage, yielding 80 tons; and one and a quarter acres of sugar cane, yielding 160 gallons of molasses. The so-called garden produce crops maintained by the Department of Horticulture supplemented the regular farm crop and provided fruit and vegetables for the campus and the community.[19]

Despite good offers from elsewhere, Gulley remained as Professor of Agriculture at the college until 1888, at which time he went to the Texas Experiment Station.[20] As we shall see, Gulley, in spite of endless handicaps, endeavored to set the agricultural program of the college on its feet, taking an active part not only in the instructional program but also in furthering the influence of the college on the whole state. He also saw the development of the Farmer's Institute program and the Experiment Station.

Before his departure, Gulley had made a very considerable contribution to the training of Mississippi farmers by preparing an elementary textbook in agriculture for use in the common schools and in the preparatory course at the college. The book had resulted from a demand by the board that agriculture be taught

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12. Biennial Report, 1884-1885, 10.
13. Chickasaw Messenger, December 23, 1880; Jackson Weekly Clarion, December 2, 1880; Minutes of the Board, October 5, 1880.
14. Ibid., 37-38.
15. Southern Livestock Journal, July 21, 1881.
16. Jackson Weekly Clarion, November 15, 1882.
17. Jackson Weekly Clarion, November 15, 1882.
18. Biennial Report, 1883, 37.
19. Biennial Report, 1886-1887, 35.
20. Southern Livestock Journal, October 12, 1882; Minutes of the Board, March 16, 1888.

in the preparatory department, a step that was first taken in the session of 1885-6.[21] The board's action was echoed by the farm organizations of the state, particularly the Alliance, which even memorialized the legislature to the effect that a law should be passed requiring the inclusion of agricultural training in the public schools. Gulley's textbook was used extensively, and in 1889 Lee could say that it had been "found that boys learning arithmetic, geography and grammar more readily master this textbook than the above named common school studies."[22]

In 1887, the year before he left the college, Gulley could justifiably boast of his achievements:

> The farm has received no money from the College fund, or the State, for three years, and annually clears a profit, which has been invested in improvements, development and stock, after paying all expenses... . The farm lands of the College have steadily increased in value, and in the last four years (since the farm was really equipped), have become $14,625 more valuable than they were. This valuation has been given by different committees of appraisement of disinterested citizens, as showing results of the system pursued; so that the Board of Trustees adhere to their policy, and use all money made on the farm in paying expenses, and in its further development and improvement, as the best possible investment.
>
> The farm department was well equipped by 1884, and is now giving good and encouraging results, without expense to the State; and every year will give better results.[23]

After Gulley's departure in 1888, Professor B. Irby occupied the chair of agriculture, only to yield in the next year to J. H. Connell, who in 1893 set out like Gulley for Texas, becoming Professor of Agriculture and Director of the Experiment Station.[24] The choice of Connell's successor was a testimony to the achievements of the college, for W. C. Wellborn, a graduate of the class of 1886, was given charge of the Department of Agriculture.[25]

As we have already seen, Col. Montgomery would not rest until the college had taken cognizance of the natural advantages for the promotion of livestock and dairying as offered by the prairie soil of Starkville. The Southern Livestock Journal also never failed to din into college ears the urgency of livestock development.

From the beginning plans were made for building up a college herd. During the first year a number of animals were purchased. In January, 1881 Gulley was at work building his cattle barn, which was soon ready for use.[26] At the press association convention in June Lee stressed the interest of the college in livestock, pointing out that he planned to "show every kind of stock, and report what is best for our climate and soil."[27] In the autumn of 1881 a visitor from Michigan Agricultural and Mechanical College reported "a large herd of cows, both pure breeds and natives, being kept for their milk and butter products... ."[28] Apparently the praise from the Michigander was more well-intentioned than justified. So far, almost nothing in the way of livestock and dairy development could have been accomplished. Gulley was well aware of this, and in January, 1882 he asked the legislature for funds to provide stock-barns, a sub-earth dairy, machines "for feeding and experimenting with stock," additional grazing lands, and the purchasing of various breeds of both beef and dairy cattle.[29]

Funds appropriated in 1882 were devoted to carrying out some of Gulley's recommendations. Plans were made to purchase thoroughbred livestock, a committee of the board of trustees being appointed for that specific task. Among the first purchases was a Galloway Bull, for which the board provided the sum of $100 and the name of one of its most enterprising members, Major Paxton.[30]

Also, beginning on July 5, 1882 and on the second working day of each commencement thereafter an annual stock sale was scheduled, in which all breeders throughout the state would be invited to participate, exhibiting their own cattle along with those of the college farm.[31] The Mississippi Stock Breeders Association appears to have given the impetus to the establishment of the stock sale. In fact, in 1882 the college had nothing to sell; rather it merely offered its facilities to state livestock men who wished an opportunity to dispose

21. Minutes of the Faculty, September 21, 28, 1885.
22. Idem; Biennial Report, 1888-89, 15.
23. Biennial Report, 1886-87, 12-13.
24. Mississippi A. & M. College, First Decennial Catalogue, 4; Biennial Report, 1892-93, 6; Lee to J.H. Connell, March 28, 1893, President's Letter Book.
25. Minutes of the Board, June 20, 1893.
26. Southern Livestock Journal, January 18, 1881.
27. Jackson Weekly Clarion, June 16, 1881.
28. Southern Livestock Journal, October 6, 1881.
29. Southern Livestock Journal, February 9, 1882.
30. Minutes of the Board, March 29, 1882.
31. Catalogue, 1881-1882, 45; Southern Livestock Journal, June 15, 1882.

of their surplus.[32] Meanwhile, the Association, which had been actively directing memorials to the trustees, adopted the campus as the spot for its annual meeting.[33] In July, 1882 the board, acting on the advice of the stock association, authorized the college to purchase Holstein and Hereford cattle.[34] In addition to these a number of Galloway, Short Horns, and Devons were bought.[35] The college herd already contained a sizeable number of common stock, and the new purchases were intended for "up-grading." By November 1882 the herd had passed the 200 mark, about 140 of the number being used as milk cows.[36] Meanwhile, Gulley had put the students to work building a silo, where "the green food having been cut up fine with a machine and put in the four enclosed cemented brick walls...is packed by students walking on it, then weighted down with a covering of plank with three or four feet of dirt." General Lee felt that the ensilage experiment would be "worth hundreds of thousands of dollars to the people...if it worked out as expected."[37]

As yet, Lee seems to have conceived of his dairy program in limited terms, its purpose being to "supply the students with beef, butter and milk, the great advantage being that the College mess hall affords a market for the College produce."[38] In fact, the major interest of the college, aside from milking and buttering the student body, appears to have been centered not in dairying but in livestock breeding, probably because of the tutelary influence of the Livestock Association. Nevertheless, Gulley had hoped for a dairy, one that would be devoted to other than merely local purposes. Montgomery had similar plans, and he meant to have his way. That the college was slow to set up a full-time dairy husbandry department was a subject upon which the Colonel had expressed his dissatisfaction in the Southern Livestock Journal in June, 1882, in connection with a letter of inquiry from a dairyman. "Who in connection with your A. & M. College," asked the Colonel, "can give a satisfactory answer?"

> The magnitude of the dairy interest in the United States and the growing interest upon the subject in the Gulf States taken in connection with the mildness of our winters and our great grass capabilities—demand upon the part of our industrial colleges thorough instruction upon the subject of Dairy Husbandry. A competent man in this Department at the Mississippi A. & M. College, combining Scientific and practical attainments and capable of thoroughly instructing the young men in the practical details of the business, would in a very few years add millions to the property interest of the State.[39]

Actually the legislature had already appropriated funds to teach dairy husbandry, and steps were being taken by the board to build a dairy building.[40] On July 4, 1882 the board resolved that it had the intention of creating a "Professorship of Dairy Husbandry," and instructed Gulley to "look to this result in his Stock Breeding."[41] Although Gulley did not take these orders literally, it did almost become necessary to breed the professor in question. For two more years the dairy husbandry chair existed only on paper—in fact, not even there, for it was not until the catalogue of 1884-1885 that the professorship in dairy husbandry was even listed in the college catalogue. At that time the chair was still vacant; but J. N. Harvey, a graduate of 1884, who had spent the summer visiting northern and western dairy farms, was serving as acting professor in the department.[42] The delay was caused as much by lack of funds as lack of professors. Gulley had been attempting to carry on meanwhile, but in his report of 1883 he observed that although the college was "nearly" ready to conduct experiments in the dairy line, special funds would have to be provided before success could be expected.[43]

During the spring of 1885 a college creamery, if not a full-time Dairy Husbandry Department, began operations, Gulley himself attempting to man the pails. A sub-earth duct on the Wilkinson plan was installed, together with a separator, churn, and butter worker.[44] Gulley described the creamery in glowing terms in his annual report, boasting that the college was "entitled to the credit of being the first to show from actual trial extending through an entire summer that a creamery can be profitable to its patrons in this state, and butter of a quality that excels the best western butter, made and delivered in good condition."[45]

32. Southern Livestock Journal, June 15, 1882.
33. Minutes of the Board, May 6, 1882, May 29, 1882; Southern Livestock Journal, June 22, 1882.
34. Minutes of the Board, July 4, 1882.
35. Jackson Weekly Clarion, November 15, 1882; Southern Livestock Journal, January 11, 1883.
36. Minutes of the Board, June 20, 1883.
37. Jackson Weekly Clarion, November 15, 1882. 38. Idem.
39. Southern Livestock Journal, June 29, 1882.
40. Minutes of the Board, March 29, 1882.
41. Ibid., July 4, 1882.
42. Jackson Weekly Clarion, June 25, 1884; Catalogue, 1884-85, 3.
43. Biennial Report, 1882-1883, 36.
44. Minutes of the Board, March 10, 1885; Catalogue, 1884-1885, 29.
45. Biennial Report, 1884-1885, 340.

What Gulley did not boast of was the fact that the success of the first year had come in spite of numerous and embarrassing difficulties. Student help was not efficient, nor was Professor Harvey's management. General Lee complained bitterly over the filth at the dairy, together with the lackadaisical manner in which such important matters as butter shipments were overlooked by those in charge.[46] Finally, after considerable hectic correspondence with Lee, Harvey resigned, leaving the department, which had never had a real head, minus the remainder of its anatomy.[47]

During the next few years, the dairy department really existed as a division of Gulley's Department of Agriculture, although the vacant dairy husbandry chair was occasionally listed in the catalogue. Meanwhile, the college was receiving some excellent publicity in connection with its hypothetical Dairy Husbandry Department. In 1886, for example, the New Orleans Democrat was boasting that Mississippi A. and M. College had "the only chair of Dairy Husbandry in the country," and that students of the school had gone out to set up, within one year after the advent of dairy husbandry at Starkville, two new creameries in Starkville, one in Bolton, one in Meridian, and one in Macon, while A. and M. students were in great demand in other states where dairy enterprises were being contemplated.[48]

The creamery itself by no means ceased operations when the dairy husbandry department became inactive.[49] College butter was in great demand at 30¢ per pound, and the college butter market seems to have extended as far as Memphis, Vicksburg, New Orleans, the Mississippi Gulf Coast, and Mobile.[50] All this was in spite of discriminatory express rates, which favored Western butter by adding as much as three cents a pound to the sale price to the consumer. Such was "almost an embargo," complained college officials. But, in spite of the handicaps, a gross of over 5000 pounds was shipped by express from the college during the month of June, 1886.[51] Both the college and local patrons supplied the milk with which the dairy operated. In May, 1886 the Southern Livestock Journal reported that practically none of the original patrons or purchasers of the creamery products had defected. In fact, the suppliers were planning to increase their herds.[52] Whatever else the experiment in dairying had done, Lee could point in his report of 1885 to the fact that

> during the last summer twenty-one silos were erected almost in sight of the College, as the result of ensilage feeding of stock at the College; to the fact, that herds of milk-cattle are being doubled to patronize the College Creamery, which has proved a success; to the fact, that this Creamery, by its work has caused the imaginary "dairy belt" claimed further north to disappear, and demonstrated at the Agricultural College, that Mississippi is a great cattle and butter state, and for little outlay our butter can be easily handled and placed in market at the South, driving out Northern and Western butter, that in almost every instance the College Creamery butter commanded better prices than the Western butter; to the fact, that farmers in our own and other States, are almost daily visiting the College to see our methods and get information as to our practice and results; in fact, the College is almost an official bureau of information.[53]

Although there was talk in 1886 of abandoning the creamery project, the college determined to persevere. In fact, expansion was contemplated to include manufacture of ice cream.[54] Student labor was abandoned in February of that year, and in July W. C. Welborn was employed to take charge on a sort of cooperative basis, with the patrons underwriting most of the expense.[55] At the same time Welborn also became Instructor in Dairy Husbandry under Gulley.[56] One year later Welborn was out, and Lee was seeking a creamery man from among the graduates of the school.[57] Despite personnel difficulties, the creamery survived,—thanks perhaps to Gulley and Montgomery, the latter of whom contributed to the adoption of a strong report by the executive committee of the board in 1887 praising the college for its dairy work.[58] In 1899 Lee reported that the milk herd was "the most profitable of those we carry."[59] In fact, practical work in dairying in connection with the creamery was being offered during this period not only to students but also to others interested in managing creameries.[60]

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46. Lee to Gulley, September 29, 1885, President's Letter Book.
47. Lee to Montgomery, October 3, 1885, President's Letter Book.
48. Quoted in Southern Livestock Journal, July 15, 1886.
49. Lee to Montgomery, October 3, 1885, President's Letter Book.
50. Handbook and Descriptive Catalogue of Oktibbeha County, Starkville, 1887; T.T. Watson to W.B. Montgomery, July 12, 1886, President's Letter Book.
51. Watson to Montgomery, July 13, 1886, President's Letter Book.
52. Southern Livestock Journal, May 13, 1886. 53. Biennial Report, 1884-85, 11.
54. T.T. Watson to Mills and Co., Philadelphia, May 13, 1886, President's Letter Book.
55. Minutes of the Board, March 22, June 16, 1886. 56. Catalogue, 1 86-87, 4.
57. Lee to T.M. Scott, May 27, 1887, President's Letter Book.
58. Biennial Report, 1886-87, 3-4. 59. Ibid., 1888-89, 42.
60. Ibid., 1890-91, 50-51.

In June, 1893, W. C. Welborn, who had formerly been an instructor in Dairy Husbandry, returned as head of the Agriculture Department, thereby giving the department a man with a strong inclination toward furthering the dairy work of the college. Meanwhile, the Experiment Station had begun operations in the field of dairying, with the result that during the 1890's the college was attending the matter of dairy husbandry from two directions. In 1895 a small herd of Jerseys was being maintained by the Experiment Station for the purpose of studying all aspects of dairy husbandry; meanwhile the Agriculture Department was continuing its creamery activities. As a result, there were two herds and two dairies for a time. Welborn seems to have had no end of troubles. He wrangled with and won out over Lee concerning the size of the herd, which Lee wished to remain large, even though Welborn pointed out that the grazing land and barns were inadequate. He also seems to have differed with Lee over the type of forage crops, particularly over Lee's predilection for lespedeza. The General had once made the remark that lespedeza was the "compensation for our loss of negro slaves."[61] In June, 1899, the year of Lee's retirement from the college, public agitation reached a high pitch for remedial action, with the result that in the course of the next year the college creamery was turned over to the Experiment Station, and a new Chair of Dairy Husbandry was set up.[62]

Meanwhile, concern with livestock and animal husbandry had not abated. The annual sales days, which were enthusiastically sponsored by Lee, Gulley, and the trustees, were popular throughout the state. The Mississippi Livestock Association seems to have held most of its yearly meetings at the college, and at each annual commencement a cattle sale was held. On many occasions the annual meetings of the board were adjourned without hesitation while its members rushed off to witness the sales. Strict regulations designed to protect purchasers were established by the trustees.

General Lee was not unmindful of the importance of livestock in the college program. In 1888 he fired his stock man in order to obtain a better educated one who could carry on feeding experiments. In seeking another employee Lee was careful to add the postscript, "Unless you mean business & work you had better not accept."[63] That the college's interest in livestock had achieved some recognition even beyond the confines of the state is apparent from a request made to the faculty in 1889 by Maj. W.H. Caffey of Alabama, who wished to enter the college to prepare himself for "stock raising /as/ his life's work." The faculty, by the way, forthwith prepared a special course for Caffey.[64]

Instruction in veterinary science was sorely needed to accompany the dairy and livestock work at the college. At first, Dr. Phares, who had had to serve as a jack-of-all-science, assumed the responsibility for veterinary work, offering a three month course in this field. In 1885 Lee strongly urged the legislature to appropriate funds for the creation of a Chair of Veterinary Science to be filled by a State Veterinary Surgeon. Lee pointed out that the cost would be saved many times over in the prevention of "very great" livestock losses in Mississippi.[65] Two years later the deaf ears were opened; and in July, 1887 the board of trustees was ready to employ a veterinary surgeon at $1500 a year.[66] This handsome salary was a raise of $500 over the original allotment! Of course, not a soul was willing to do the missionary work that such a stipend entailed. Finally, in 1891, after receiving congressional aid, the college took a further step with the creation of a Chair of Veterinary Science, sponsored jointly by the college and the Experiment Station, and the prospect was held out to any applicant that he would be allowed to continue private practice. Dr. Tait Butler accepted the new position.[67] By the time that Dr. J.C. Robert took over in June, 1897, the teaching of veterinary science had become well established at the institution.[68]

The first step toward dividing the work of the Agriculture Department of the college was the establishment of a Department of Horticulture, which the board of trustees authorized on July 2, 1881. The department was not, however, to exist on its own for another year, as funds were lacking.[69] In July, 1882 J.J. Colimant, who had been trained in Germany, was appointed as Assistant in the Department of Horticulture.[70] The college lands were now divided between the Agriculture and Horticulture Departments, and a field formerly used by the students as a baseball diamond became the center of horticultural activities. Among the immediate objectives of the new department was the furnishing of vegetables both for the mess hall and for sale to the community. Another project upon which the department was instructed by the board to busy itself was the "establishment of the Silk-Worm industry at the College," a project which Lee hoped would "open the silk

61. Welborn to Lee, May 20, 1898.
62. Minutes of the Board, June 26, Oct. 3, 1899; Catalogue, 1900-1901, 4.
63. Lee to W.R. Barry, Nov. 9, 1888, President's Letter Book.
64. Minutes of the Faculty, September 19, October 7, 1889.
65. Biennial Report, 1884-85, 11-12. 66. Minutes of the Board, July 4, 1887.
67. Ibid., Jan. 19, June 15, 1891; Biennial Report, 1890-91, 12.
68. Minutes of the Board, June 7, 1897. 69. Ibid., January 3, March 29, 1882.
70. Ibid., July 3, 1882; Catalogue, 1881-82, 4; Southern Livestock Journal, Oct. 12, 1882.

industry to the ladies of the state."[71]

During the session of 1882-1883 Colimant assumed the title of Professor of Horticulture and Entomology, and unsuccessfully petitioned the faculty to allot more time to the teaching of his subject.[72] At the end of that session, Colimant reported that his department possessed an orchard of over 2,000 fruit trees of all the "leading varieties," a vineyard with over 60 varieties of grapes, a nursery containing over 50,000 young trees and vines, several beds of the "best varieties" of strawberries, and a vegetable garden, where new varieties as well as old were being produced.[73] In fact, the only sour note was that Colimant had completely failed to convince the president of his competence. During the spring of 1883, Lee wrote repeatedly to Colimant criticizing the professor's failure to furnish vegetables sufficient to supply the mess hall. Moreover, said Lee, the prices charged the mess hall should have been considerably lower than they were. For example, a small onion was charged for just as if it had been a large one. Since the total effect of all this was to raise the students' board bills, Lee was perturbed. "I do not," said he, "think the boys should pay for the failure to have full grown onions." Moreover, Lee was of the opinion that the gardens did not produce as much as $100 worth of vegetables a month. When Colimant bristled at Lee's charges, the old General replied in kind.

To make matters worse, difficulties with the faculty over the horticultural course were occurring at the same time, and Colimant had spoken too much of his mind both about and to his colleagues. Lee professed to be surprised that a man who so freely criticized the Chemical, Agricultural, and other Departments in the faculty and "elsewhere" could not bear to hear criticism directed at him. Colimant had apparently accused the president of meddling and interfering in the operations of the department, to which charge Lee replied that suggestions and requests had been made, but nothing sterner in nature, and that after all, Colimant had steadfastly avoided complying. Colimant naturally threatened to do something about it all, probably resign. To which Lee remarked, "as for the course you threaten to pursue, you can exercise your own pleasure."[74] In short, Lee was convinced that Colimant had not been attentive to duties; so Colimant's days were all but numbered. When the trustees met in June, an investigating committee was appointed with "full plenary powers." Colimant's department was ordered by the board to provide four kinds of vegetables daily to the "boarders," and in case of failure to comply Colimant should report to the executive committee of the board.[75]

Although Colimant survived the June inquisition, the test of his faith continued. Colimant held along with his title of head of his department the position of "Superintendent of Garden and Grounds."[76] In November, 1883 Lee was chiding Colimant for failure to do his duty by the grounds. It appears that the professor had been instructed to plant grass and clover on the south side of the railroad. This task had been neglected "last year" and was seemingly going to be overlooked for a second year.[77] Moreover, the mess hall had failed to receive vegetables as ordered by the board, whereupon the executive committee in November demanded an explanation.[78] Needless to say, Colimant betook himself elsewhere at the end of the session, and the board authorized Lee to take over the property of the Horticulture Department and "save and sell" as he deemed best.[79] Meanwhile, the college was to employ a foreman, and students were employed to remain during the summer to look after the garden and greenhouse.[80]

In September, 1884 A.B. McKay was engaged to take over the Horticulture Department.[81] McKay's duties at first appear to have involved the grounds more than the classroom. He was, nevertheless, elevated to Acting Professor of Horticulture in June, 1885.[82] McKay was to make the Horticulture Department largely his own handiwork. His home was in Canton, where his father was famous as a strawberry king. Perhaps, for that reason, the Horticulture Department was reported in May, 1886 to be shipping between seven and eight bushels of berries a day to Chicago and other western cities.[83] In 1889, McKay left temporarily to take a more lucrative position. In that year a lack of appropriations to equip the department and raise the rank and salary of its head had caused the outlook to be quite gloomy. However, federal funds and legislative repentance soon brought more money to the department, and in 1890 McKay returned, this time as a full professor.[84]

71. Minutes of the Board, July 4, 5, 1882; Jackson Weekly Clarion, November 15, 1882.
72. Catalogue, 1882-1883, 4; Minutes of the Faculty, May 14, 28, 1883.
73. Catalogue, 1882-1883, 28.
74. Lee to Colimant, May 24, 25, 28, June 3, 1883, President's Letter Book.
75. Minutes of the Board, June 19-20, 1883.
76. Catalogue, 1882-1883, 4.
77. Lee to Colimant, November 7, 1883, President's Letter Book.
78. Minutes of the Board, November 14, 1883.
79. Ibid., June 17, 18, 1884.
80. Ibid., June 18, 1884.
81. Ibid., September 17, 1884.
82. Ibid., June 16, 1885.
83. Southern Livestock Journal, May 13, 1886.
84. Biennial Report. 1886-1887, 13-14; 1888-1889, 9; 1890-1891, 14; Minutes of the Board, June 17, 1890; January 19, 1891.

The Mississippi Horticultural Society doubtless performed a great service to the college in furthering the development of the Horticulture Department. Formed in January, 1883, with representatives of the college, including Colimant, in attendance, the society made it a practice to meet and hold an exhibit at the college every year during commencement.[85] Dr. H. E. McKay, the father of Professor A. B. McKay, was the first president of the group.[86] In April, 1883 a college branch of the state society was organized, mainly for the purpose of furthering local activities in the direction of vegetable and fruit growing and shipping.[87] For some years, the results of the state society activities were discouraging. The exhibit at the commencement of 1883 was "not so large as we wished it to be," although it included state-produced tea and silkworm cocoons. The college display was largely confined to vegetables, the quality of which was highly praised.[88] Eventually, as the society failed to gain the support it had anticipated, the full day set aside for its exhibit was found to be too much, and the college authorities were forced to "improvize" to pass the time.[89]

Although the fortunes of the society languished, its leaders did not fail to lend support to the horticultural program of the college. In 1885, a memorial was directed to the trustees requesting that the Horticultural Department be placed on an equal basis with the farm at the college; whereupon, the board allotted $150 for making hot beds and cold frames, and pledged itself to comply with the memorial just as soon as it had "the means in hand." It was this unredeemed pledge that Lee constantly brought before the legislature in the next few years in his struggle for appropriations. Finally, as we have seen, the 1890's brought success to the society's dreams for the college.[90]

In the early years, when, as General Lee himself willingly admitted, the energies of the college were turned solely in the direction of agricultural training, every art and science more or less stood or fell because of its pertinence to the achievement of this objective. Attention has been given elsewhere to English, Mathematics, and the Social Sciences, all of which were taught with one hand on the plow, and one eye cocked on the legislature. The natural sciences were, of course, more suitable to the agricultural curriculum. As a consequence, Biology, Botany, Engomology, Geology, Geography, and Chemistry were welcomed as helpful handmaidens of agriculture. In fact, the professors in these fields generally exhibited a strong agricultural bias.

Dr. Phares, who was with the college from the beginning, taught at one time or another Botany, Biology, Zoology, Geology, Anatomy, Physiology, Entomology, and even Veterinary Science, all the while that he was ministering to the bodily ailments of the student body as College Physician. He was also, by the way, a minister in the Christian Church. One of the leaders in the Grange in Mississippi, Phares had worked to secure the bill to establish the college and had been one of the trustees before accepting a professorship. During the first session Phares completed The Farmer's Book on Grasses, and Forage Plants for the South, a book which was, by the way, probably the first publication by a member of the faculty.[91] Dr. W. A. Evans is our authority for the fact that Phares discovered the medicinal value of snakeroot, which is one of the chief components of Wine of Cardui. One of Phares' first projects at the college was to help organize a Society of Natural History, of which he became president. At the monthly meetings of the group the bill of fare consisted primarily of scientific papers.[92] Members of the society also assisted Phares in collecting items for a "general and special Museum" at the college.[93] Meanwhile, Phares continued to work on his favorite subject, grasses. On December 9, 1884 the executive committee of the board requested Phares to continue his experiments with grasses, ordering Lee to furnish seeds, labor, and other necessaries. Again on June 16 of the same year, the board instructed Lee to "give special attention to the culture of the various grasses suited to this climate."

Phares, with his long gray beard and his long lectures (the boys liked him dearly, but his erudition was sometimes too much of a soporific to them), became as much a tradition of the infant college as did Lee, Montgomery, and Gulley. He survived faculty quarrels, curriculum revisions, and hard work. His finger was not only in college activities but also in state-wide matters. He wrote columns

85. Jackson Weekly Clarion, January 31, 1883; Minutes of the Faculty, January 29, 1883; Minutes of the Board, June 20, 1883.
86. Southern Livestock Journal, May 3, 1883.
87. Ibid., April 26, May 31, 1883.
88. Jackson Weekly Clarion, June 27, 1883. For a summary of the transactions at this meeting see the Southern Livestock Journal, October 25, 1883.
89. Lee to H. E. McKay, January 15, 1887, President's Letter Book.
90. Minutes of the Board, June 16, 1885; Biennial Reports, 1884-1891, passim.
91. Southern Livestock Journal, June 29, July 2, 1881.
92. Ibid., June 16, 1881.
93. Catalogue, 1881-1882, 42.

on grasses and veterinary matters for the Southern Livestock Journal. His correspondence from farmers of the state was enormous. In fact, it was frequently said that men like Phares devoted almost as much time to answering letters and giving information to farmers as they did to their college work.[94] Since Phares had been identified for years with farm activities in the state, he seems to have been singled out for articles, speeches, and advice; and he never appears to have disappointed his petitioners.

Phares was not a young man when he came to the college; and in the late eighties his health became so precarious that he had to be relieved of class work.[95] Rumor has it that the old professor practically had to be driven to curtail his activities and that he was actually bitter when forced into partial retirement. He continued for a time to do experimental and supervisory work for the Experiment Station; but on June 17, 1889 he retired, his place being taken by G. C. Creelman.[96] Before his retirement Phares donated to the college a valuable herbarium that he had collected.[97] When Phares died in September, 1892, an era came to an end.[98]

Phares' successor, Creelman, continued as head of the Biology Department, teaching most of the subjects Phares had taught, except Veterinary Science and Entomology. From one of Creelman's students comes the following description of the work:

> Botany is the most interesting study I have. We study no book, only have lectures from Prof. Creelman which we copy. I think when I leave here I can analyze any plant, soil, or fertilizer I can meet with.[99]

The teaching of Geology and Geography at the college in the early years was, of course, the province of Phares and Creelman. Phares served on a faculty committee in the fall of 1881 to determine the place of Physical Geography in the course of study, with the result that the junior class received a half semester of training in this field.[100] In 1882 the college sought and obtained a geological collection from the state capitol.[101] Meanwhile, Phares himself made it his business to collect specimens from every county in the state.[102] After Phares' retirement, Creelman continued to teach whatever Geology and Geography were taught; in fact, it was not until several years after Creelman left that a separate department was organized under President Hardy in connection with an effort to teach mining at the college.

From the beginning Chemistry was an important and vital subject in the curriculum. Since farmers were becoming more and more dependent upon commercial fertilizers, not to mention other aspects of the application of chemistry to agriculture, Lee and the board were no less careful in the choice of their first chemist than they were in the choice of their first agriculturist. And, as we have seen, both of these "experts" came from Michigan A. and M. College, where progressive agriculture was in full swing.

Professor Robert Kedzie chose in his first year at the college to offer a course of lectures in Chemical Physics, Meteorology, Agricultural Chemistry, Blow-Pipe Analysis, and Elementary Physics, in addition to Elementary Chemistry.[103] At the same time he was at work in nearly every part of the state. We find him in the spring of 1881 at Aberdeen analyzing the water of the artesian wells thereabouts and examining nearby marl beds. It was his intention, said the Aberdeen Examiner, "to devote much time and attention to scientific investigation of the waters and the soils of the state, with a view to placing their resources and possibilities fairly before the country."[104] However, Kedzie was too zealous for his own good. Just as he was making for himself "quite a reputation" with the citizenry, he died suddenly, the victim, as Lee insisted, of "excessive work, from which he could not be diverted." Kedzie's death was, said Lee, "a public calamity."[105] Before Kedzie's successor was chosen, a student, H. H. Harrington, one of the ablest of the men in the first class of the college, took charge of the laboratory work and a portion of the teaching. He also remained on hand when Professor John A. Myers, who had worked three years in German chemical laboratories, arrived to take charge in September, 1882.[106] Myers paid ready tribute to Kedzie's "high attainments, good judgment and great energy."[107]

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94. Biennial Report, 1882-1883, 13; 1884-1885, 13-14.
95. Minutes of the Board, September 17, 1888.
96. Ibid., June 17, 1889.
97. Ibid., June 18, 1888.
98. Minutes of the Faculty, September 22, 1892.
99. Patrick Fontaine to Mrs. S. C. Fontaine, n.d. (1890's), Fontaine Papers.
100. Minutes of the Faculty, November 14, 28, 1881.
101. Minutes of the Board, January 13, March 28, 1882.
102. Southern Livestock Journal, January 11, 1883.
103. Catalogue, 1880-1881, 17-18.
104. Quoted in Southern Livestock Journal, June 30, 1881.
105. Lee to T. B. Smith, February 18, 1882, Mack Ivy Papers.
106. Southern Livestock Journal, October 12, 1882.
107. Biennial Report, 1882-1883, 40.

Myers arrived to find a new duty assigned to the Chemistry Department —that of analyzing commercial fertilizers used in the state. In March, 1882 the legislature made the Professor of Chemistry at the A. and M. College ex-officio State Chemist with the duty of analyzing "all fertilizers, whether natural or artificial, submitted to him by manufacturers, vendors or other persons using the same, and to furnish such persons with a certificate of his analysis." Manufacturers were to submit "fair samples" of their product to the State Chemist, and the certificates issued on the basis of these samples were to be exhibited by the producers "in a conspicuous place" where purchasers might examine the contents. Manufacturers were to pay a fee of $20 for each analysis. Purchasers who suspected adulteration might obtain an analysis free.[108] In his report of 1883 Myers listed 41 brands of fertilizer tested.[109] Since the work of the Department of Chemistry had now suddenly become very extensive, laboratory equipment, a new chemical laboratory, and additional assistants were forthcoming. The new laboratory building, which was completed in 1883, was described as the best in the South, and further additions had to be made in the 1890's.[110]

Needless to say, the fertilizer testing program proved lucrative both to the State Chemist and to the college. In June, 1883 the board established a policy of allowing a fee of 25% for the professor making the tests, while the college retained the remainder.[111] Subsequently, the college decided to take over the entire fee; and in 1892 the legislature revamped the fertilizer law, thereby increasing both the work and the income of the department.[112] The fertilizer testing program served to enrich not only the farmers of the state but also the college. When the legislature withheld funds for operations and maintenance, in fact, even when funds ran short for completing buildings, there was always the fertilizer fund; so, in the long run the growth of many of the services of the college was to be stimulated by, of all things, fertilizer!

Under Myers, the Chemistry Department offered many services to the farmers of the state. Soil analysis continued, together with that of fertilizer. Often the department was swamped with specimens of this and that sent in from all quarters.[113] In 1889 the analytical work included not only soils and fertilizers but also mineral waters, marls, potable waters, grasses and clovers, feeding stuffs, saccharine juices, insecticides, minerals, milk, and muck.[114] A considerable amount of attention was also paid to meteorology.[115] In the late eighties some attention was also being given to the chemistry of sugar-making, in which field a number of students prepared themselves for professional work.[116]

During the academic year of 1888-1889, W. L. Hutchinson, who had worked in Georgia and Louisiana, took over the Chemistry Department, where he remained until he became head of the Experiment Station in 1899.[117] Meanwhile, in January, 1888 Harrington had resigned to go to Texas A. and M. College as Professor of Chemistry.[118] In fact, there was considerable turnover among the assistants in the department in the late eighties and early nineties, partly because of low salaries, partly because men trained in the A. and M. Chemistry Department were able to obtain good positions in other parts of the country. One of those who came and remained was William Flowers Hand, who in June, 1893 was employed as an assistant in the department at the princely salary of $600 a year, to be paid out of the fertilizer fees.[119] After a rapid series of promotions, Hand reached the pinnacle of department head in the year of General Lee's retirement.

The Chemistry Department was not lax in attending the needs of the farming interests of the state. Analyses were published both by the college and in a number of local newspapers.[120] Also members of the department attended farm meetings, usually giving pertinent lectures on agricultural chemistry. Farmers' Institutes and Experiment Station Work also consumed much of the time of the department personnel.

Whatever the handmaidens of agriculture—or the agricultural departments themselves, for that matter—contributed to the advancement of knowledge, the ultimate test of the worth of the college program was its contribution to the advancement of Mississippi. Actually it was to be by experimentation and extension that the college was to leap the gap between the classroom and the furrow. A study of the beginnings of the Experiment Station and of agricultural extension work will be the major concern of the chapter to follow.

108. Mississippi, Laws, 1882, 44-47. 109. Biennial Report, 1882-83, 48-49.
110. Southern Livestock Journal, January 11, 1883; Minutes of the Board, June 18, 1894, April 8, 1896.
111. Minutes of the Board, June 20, 1883; June 18, 1886.
112. Ibid., June 18, 1888; Biennial Report, 1892-1893, 9-10.
113. Ibid., 1882-1883, 38-45.
114. Ibid., 1888-1889, 48.
115. Ibid., 1884-1885, 38-40.
116. Minutes of the Faculty, February 11, 18, 1889.
117. Minutes of the Board, September 17, 1888.
118. Biennial Report, 1888-1889, 48.
119. Minutes of the Board, June 19, 1893.
120. Ibid., June 16, 1886; June 14, 1892.

EXTRACTS & ABSTRACTS

The Lusignans in England, 1247-58 by Harold S. Snellgrove

(NOTE: The article below is an abstract of a dissertation submitted by Dr. Snellgrove in partial fulfillment of the requirments for the doctorate at the University of New Mexico. Dr. Snellgrove received his degree in June, 1948. During the past year the manuscript has been revised for publication and has already been accepted by the University of New Mexico Press.)

In the year 1200, King John of England married Isabella of Angoulême. Of their five children, Henry, the older son, became king on the death of his father in 1216. John's widow, dissatisfied with her treatment in England and desirous of seeing her native land again, deserted her five children by King John, returned to Angoulême and shortly thereafter married Hugh de Lusignan, Count of La Marche. Despite the fact that Isabella, because of her beauty, has been called the Helen of the Middle Ages, it appears that the marriage was none too happy for Hugh. Isabella's termagantish character time and again forced her husband into difficulties which ultimately brought about the degradation of the house of Lusignan.

Hugh and Isabella had nine children. The ever-present realization that these children had to be provided for must have caused both Hugh and Isabella much worry. But after the death of Isabella, Hugh took the cross; and five of the children accepted the invitation of their half-brother, Henry III, to come to England. On their arrival, Henry welcomed them with open arms. William de Valence was endowed with extensive lands and was married to Joan de Muntchenesy, co-heiress of the vast Pembroke estates; Aymer was given a number of ecclesiastical sinecures and was sent to Oxford to study; Alice was married to John de Warenne, earl of Surrey; and Guy and Geoffrey were showered with riches.

The nature of Henry's generosity to the four half-brothers who came to England in 1247 proves to be an interesting study in the methods by which a feudal prince rewarded his subjects. These rewards took the form of grants of yearly fees, outright donations of money, and endowments with wardships, escheats, and other lands. In addition, Henry's generosity to his half-brothers covered many other phases of feudal life. There were also, among other things, donations of palfreys, cattle, sheep, and silver dishes. Less tangible but equally important grants included the right to hold markets and fairs on their manors, license for their men to trade without incumberments throughout the kingdom, and freedom for their men from serving on juries, recognitions, and assizes. The trust which Henry placed in the Lusignans is evidenced by the fact that he used them as counsellors and diplomats.

Since Aymer was already in holy orders when he arrived in England, Henry set out to prepare the youth for a career in the church. After presenting Aymer to a number of livings, Henry sent him to Oxford, where the lad studied under the tutelage of Master Vincent of Tours. But before Aymer could complete his education, Henry attempted to have the monks of Durham choose Aymer as their bishop. Although Henry was unable to bend the recalcitrant monks of Durham to his will, he was more successful with the monks of Saint Swithun's at Winchester. Aymer, lacking in learning, age, and character, became bishop-elect of Winchester in 1250. But Henry's efforts to have his brother elected Archbishop of York proved to be of no avail.

From the very beginning the English barons resented the Lusignan invasion. The barons felt that the king was robbing them of wardships, escheats, and other lands which were rightfully theirs. Certainly, the marriage of William de Valence to Joan de Muntchenesy, Alice de Lusignan to John de Warenne, and the daughter of Hugh de Lusignan, Henry's brother, to Gilbert de Clare caused much resentment. By such marriages the wealthiest and greatest of the English nobility were bestowed on penniless foreigners. And by these marriages Henry ignored one of the fundamental laws of feudalism,--that each of the contracting parties should be of equal rank.

Although Henry took every opportunity to further the interests of his brothers, they frequently took undue advantage of his generosity. They hounded him constantly for money; they used their influence with the king to embarrass many of the native-born nobility; and they committed many acts of violence which the barons could not forgive.

Certain marks of Henry's favor transgressed not only the letter but also the spirit of the charters. He interfered in episcopal elections; he placed his brothers above the law; he freed their followers from service on juries, assizes, and recognitions; he pardoned their servants and followers for certain heinous crimes; and, indeed, he appears to have banded together with them and other aliens against the rest of the country. Matthew Paris claims that on one occasion the Lusignans replied: "We care nothing for the law of the land: what are the ordinances or customs to us?"

For eleven years the English barons suffered the arrogance and cruelty of the Lusignans. For eleven years they observed the king lavishing upon his despicable brothers those things which they themselves desired. Finally, the day of reckoning arrived; the king was completely bankrupt and was forced to call the leading members of the nobility and clergy to a parliament at London on April 2, 1258. In return for the promise of an aid, the king consented to the reform of his realm by a Committee of Twenty-Four. Of this Committee, the king had authority to choose half, and the barons, the other half. At least three of the Lusignan brothers were included in the king's half.

On June 11, 1258 another parliament met at Oxford, and the Committee presented its program of reform. In the course of the meeting, all were asked to swear to the provisions. The king's brothers refused, and fearful of their safety, fled, under the cover of night, to Winchester. On learning of their flight, the

barons pursued them, forced them to capitulate, and ultimately expelled them from the kingdom on July 18,1258. The revolution was accomplished without bloodshed.

It is evident that the king loved his brothers. But it seems that his interest in them also stemmed from other important factors. It is likely that he was interested in creating a powerful court party and in setting up the French system of appanages for younger members of the royal family. The question as to why Henry accepted so readily the expulsion of his brothers is not difficult to answer: he was under the domination of Simon de Montfort and the anti-royal Council.

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THE HOOVER COMMISSION AND THE FARMER by Gordon K. Bryan (continued from page 4)

in the Department of Agriculture should study carefully the Task Force's Report as well as those of the Commission, together with all of the dissenting views of the Commission and Task Force members. Unanimity was by no means achieved by either the Task Force on Agricultural Activities or the full Commission, and much can be gained by studying the various views expressed in the dissenting statements of some of the members.

Whatever one might think of the proposals of the Task Force relative to organization of the Department of Agriculture, there is little to criticize in its approach to the problem. This approach is described by the Task Force as follows:

> Recognizing that no single system or pattern can contain neatly all aspects of all activities and units, the committee (task force) sought some basic guide whereby it might relate the many activities and units in the National Government affecting agriculture. It sought (to focus such activities) in a unified program in cooperation with State programs without obscuring and confusing the respective and joint responsibilities of the national department and the State agencies. The guide found most helpful is function.

This functional approach to the widely functional program, which was the object of the Task Force's study, has done much to gain for its proposals the respect of agricultural specialists and laymen alike.

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MISSISSIPPI'S WATER RESOURCES by Lee B. Gaither (continued from page 9)

Since the responsibility for the development and conservation of Mississippi's water resources is divided among a number of agencies, there is little coordination in planning and executing policies and projects. Each agency tends to deal with the problems in terms of its own limited responsibilities and interests. Fortunately, some encouraging trends in cooperation are beginning to develop. For example, the U. S. Corps of Engineers and the soil conservation district agents are working together on flood control in the Yazoo Basin.

Conclusion

Although water is an inexhaustible resource on a world-wide basis, local shortages develop when man violates the laws of nature. Then, too, man's failure to utilize water resources wisely results in floods, power shortages, erosion, and destruction of wildlife. Mississippi is fortunate in having an abundance of ground and surface water. If our people make wise use of water and the soil, Mississippi can look forward to centuries of prosperity because these two resources are the most valuable enduring gifts of nature.

KAUFMAN ATTENDS CHURCH COMMUNITY MEETING

Dr. Harold Kaufman spoke to a community church group at Rome, Mississippi on April 3. All the churches of the community participated in the making of plans for a community service program.

NIEDERFRANK VISITS IN STATE

Dr. E. J. Niederfrank, Extension Rural Sociologist of the Federal Extension Office in Washington, visited in the state during April. He and Dr. Kaufman found much interest in local organization and community development in the counties in which they visited.

SOCIAL SCIENCE EXHIBIT HELD DURING FESTIVAL

At the State College festival held on Wednesday, April 26, there was a joint exhibit sponsored by the Social Science activities on the campus. A special booth was set aside in the Business-Education Building Auditorium for the exhibit. Cooperating in the preparations were the following: Department of Economics, Department of History and Government, Division of Sociology and Rural Life, The Social Science Council, and the Social Science Research Center. A committee consisting of G. K. Bryan, W. P. Carter, and Norman E. Weir was in charge of the project. Dr. Bryan, Professor Weir, and three students, Winton Cain, John Hadskey, and Raymond Rhodes, did yeoman service in setting up the exhibit, and its success is the result of their efforts.

PROFESSOR MAGRUDER ADDRESSES CIVIC CLUB

Professor Augustin Magruder addressed the Starkville Civic Club at its regular meeting on April 11. He spoke on the subject, "Good Citizenship."

CAIN WRITES HISTORICAL ARTICLE

Professor C. E. Cain, who has been at work on the history of Jackson County, is the author of an article, "The First One Hundred Years of Post Offices on the Pascagoula River." Mr. Cain's study appears in the Journal of Mississippi History, Vol. XI, 178-184.

BETTERSWORTH GIVES COMMENCEMENT ADDRESS

Dr. John K. Bettersworth gave the commencement address at the Tishomingo High School on April 21st at 8:00 p. m.

U.S.D.A. REPRESENTATIVES VISIT CAMPUS

Dr. Carl C. Taylor, Dr. Arthur Raper, and Mr. Lee Langsford of the Bureau of Agricultural Economics, U.S.D.A., Washington, visited at the College the first week of May and discussed with social scientists in the Experiment Station the possibility of a research project on the social aspects of mechanization and technological changes in Mississippi. On the evening of May 4 this group participated in a panel discussion before the Social Science Round Table on the subject, "The Effects of Mechanization on the Economic and Social Life of the South." Also taking part in the discussion were Grady B. Crowe, of the Delta Branch Experiment Station, and two members of the college staff, Harald Pedersen and James P. Gaines. Dean Frank Welch and Dr. Harold F. Kaufman served as moderators.

RANDOLPH ADDRESSES NEWMAN CLUB

Colonel George N. Randolph, lecturer in history, spoke before the Newman Club of Mississippi State College on May 10. Colonel Randolph's subject was "Hobbies."

BETTERSWORTH SPEAKS AT CAREER DAY

Dr. John K. Bettersworth spoke on "College Opportunities" at the annual career day exercises of Webb Consolidated School on May 4.

MOORE SPEAKS BEFORE CHURCH GROUP

Dr. Glover Moore, of the Department of History and Government, addressed the Women's Guild of the Starkville Episcopal Church on Monday evening, May 15.

BRYAN ON RESEARCH TRIP TO JACKSON

Dr. Gordon K. Bryan was in Jackson on a research trip May 17-19. He is preparing a study of county finance problems for the Mississippi State College Social Soience Research Center.

BUSINESS ACTIVITY IN MARCH EVALUATED

Unadjusted data from all parts of the state placed business activity for March approximately 5 per cent above that for the same month last year and 8 per cent above that for February, according to the April Business Review of the Mississippi Business Research Station at Mississippi State College. The increase over last March was due to overall gains for money order sales, telephones in service, electric connections, gas connections, and life insurance sales. However, bank debits were down 2 per cent and the number of registration licenses issued fell 23 per cent. The general pattern by districts showed thirteen of the sixteen trade areas with more business activity than a year ago and all of them with an excess over the previous month. The Natchez district, with a 23 per cent gain, continued to lead the others in the percentage of gain over the corresponding month a year earlier. Much of the increase in the Natchez area is due to increased industrial payrolls and oil activity. Business activity in the Natchez district was 12 per cent above the previous month. The thirteen trade areas with increases over both March 1949 and February 1950 were Columbus, Corinth, Greenville, Gulfport-Biloxi, Hattiesburg, Jackson, Laurel, McComb, Memphis, Meridian, Natchez, Tupelo, and Vicksburg. The Clarksdale, Greenwood, and Pascagoula areas had small losses when March business activity was compared with that for a year earlier.

WEEMS ATTENDS BUSINESS ASSOCIATION MEETING

Dean R. C. Weems, Jr., of the School of Business, recently attended the annual meeting of the American Association of Collegiate Schools of Business. The Business School here has applied for full membership in the association.

SAWYER TO HEAD FACULTY YMCA CLUB

Professor Tom Sawyer, of the History and Government Department, was recently elected next year's president of the Faculty Y Club at Mississippi State College.

HIMSTEAD TO VISIT CAMPUS IN FALL

Dr. Ralph H. Himstead of Washington, a prominent political scientist and the general secretary of the American Association of University Professors, has agreed to address a statewide meeting of this organization at Mississippi State College next October, according to Dr. Arthur Ollivier, president of the State College Chapter.

A.A.U.P. ELECTS OFFICERS

Dr. Arthur Ollivier was recently reelected as president of the local A.A.U.P. chapter. Other officers chosen were Dr. E. H. Price of the Modern Languages Department, vice president; Professor T. A. Kelly of the Accounting Department, recording secretary; Dr. Harald A. Pedersen of the Sociology and Rural Life Division, corresponding secretary; Professor C. E. Cain of the General Education Division, historian; and Professor Roy A. Klages of the Business Administration Department, treasurer.

BETTERSWORTH SPEAKS ON MISSISSIPPI INDIANS

Dr. John K. Bettersworth addressed the State College Sorosis Club at a luncheon meeting on May 10. His subject was "Indians in Mississippi."

DAVIS ACCEPTS T.V.A. POSITION

Audie C. Davis, graduate assistant in agricultural economics, will leave in June to accept a position with the Tennessee Valley Authority.

JENKINS ATTENDS MARKETING SESSION

Lewis P. Jenkins, Instructor in Agricultural Economics, will attend the Farmers' Cooperative Education and Training Workshop at Long Beach on May 30-June 1.

CHRISTIAN ATTENDS MARKET CONFERENCE

Mr. W. E. Christian, Jr. will attend a conference on appraisal of technological advancement and utilization of markets in New Orleans on May 26-27.

EXPERIMENT STATION AND EXTENSION MEN ON TOUR

Dr. O. T. Osgood will attend a valley study tour in Abington, Virginia May 21-27. He will be accompanied by three men from the Extension Service, Mr. L. A. Olsen, Mr. T. M. Montgomery, and Mr. S. P. Dent.

VISITING PROFESSORS FOR SUMMER SCHOOL

Two visiting professors from Mississippi State College for Women will teach at the college during the first term of summer school. They are Dr. Joseph B. James, Professor of Political Science, and Dr. Minnie Claire Boyd, Professor of History. Dr. James will teach senior-graduate courses in International Relations and in Modern Political Theory. Dr. Boyd will give an undergraduate course in Early American History and a senior-graduate course in Contemporary World.

CARTER ADDRESSES YOUTH GROUP

Dr. W. P. Carter, Professor of Sociology, addressed a youth group at the First Methodist Church in Starkville on April 17. His subject was "Courtship and Preparation for Marriage." Young people from Columbus and West Point joined the Starkville group for the meeting.

SOCIOLOGY CLASS VISITS PARCHMAN

About 50 students in the Criminology and Social Pathology classes of Dr. W. P. Carter participated in a field trip on May 11 to the state prison farm at Parchman.

HAWKINS TO VISIT CAMPUS IN JUNE

Dr. L. S. Hawkins, director of educational research for the American Technical Society, will conduct a course in the philosophy and administration of vocational education at Mississippi State College from June 5 to June 23, Dean B. P. Brooks, director of the summer session, has announced. Dr. Hawkins has been invited to address a special meeting of the Social Science Round Table.

WELCH ON REGIONAL EDUCATION COMMITTEES

Dr. Frank J. Welch, director of the Agricultural Experiment Station and dean of the School of Agriculture of Mississippi State College, has been given two important assignments in the organized program for Southern Regional Education, which is sponsored and promoted by Southern Governors. He will serve as a member of the Commission on Development of Graduate Studies for the Board of Control for Southern Regional Education, and he will also be a member of a special committee on supplemental graduate facilities.

FARM PRICES FOR MARCH STUDIED

Professors D. W. Parvin and W. E. Christian, Jr., of the Agricultural Economics Department, have contributed their monthly survey of farm prices for the April Mississippi Farm Research. According to this study, prices received by Mississippi farmers in March increased slightly from the preceding month to 240 per cent of the 1909-14 average—the same level of prices as received one year earlier. Prices received by all farmers in the United States remained unchanged from the preceding month and at 237 per cent of the 1909-14 average was slightly below prices received by Mississippi farmers. Prices paid by farmers in March increased two points from February to 250 per cent of the 1910-14 average. The parity ratio in March was 96 for Mississippi and 95 for the United States.

SOCIAL SCIENTISTS TO SPEAK AT F.H.A. MEETING HERE

A Farmers Home Administration Conference is to be held at Mississippi State College May 31 to June 2. Arrangements are being made by T. B. Fatherree, state FHA director, and by Dallas C. Vandevere, chairman of the arrangements committee. Approximately 130 FHA workers are expected to attend. A number of the college faculty members will participate in the program. They include: Dr. Harold F. Kaufman, Thomas L. Bailey professor of sociology and rural life, who will talk on developing Mississippi communities; Dr. Harald A. Pedersen, assistant professor of sociology and rural life, who will discuss why farmers accept recommended practices; Dr. Otis T. Osgood, agricultural economist, who will speak on land use; J. P. Gaines, assistant professor of agricultural economics, who will discuss farm mechanization; Grady B. Crowe, agricultural economist, Delta Branch Experiment Station, who will deal with farm reorganization and production control in the Delta; and Dr. D. W. Parvin, associate professor of agricultural economics, who will discuss reorganization and production control in the hill areas.

MCCAIN SPEAKS ON CULTURAL ASPECTS OF ENGINEERING COURSES

The cultural aspects of the engineering curricula at Mississippi State College were discussed recently by Professor Dewey M. McCain, head of the civil engineering department, addressing the last meeting of the semester for Tau Beta Pi, honorary engineering fraternity.

SPECIAL GEOGRAPHY COURSE SCHEDULED FOR SUMMER

Sixteen states will be visited by students enrolled in a special course in geography to be offered by Mississippi State College for the first time this summer. Scheduled for July 14 to August 19, it will carry the students on a 24 day field trip of over 5,600 miles. Six hours credit in geography may be earned by those who enroll in this course, which will be under the direction of Dr. Merle W. Myers.

ROBERSON RECEIVES GARNER SCHOLARSHIP

John E. Roberson, Jr. has been selected as recipient of the James W. Garner scholarship for 1950-51. Roberson is a major in agricultural economics with a double major in history. The award, which entails a stipend of $300, is the gift of Mrs. James W. Garner of Jackson, who established the scholarship as a memorial to her late husband, an alumnus of Mississippi State College and a world renowned political scientist.

TALBERT RECEIVES DELTA SIGMA PI AWARD

Charlie J. Talbert, a graduate of the School of Business, who is at present enrolled in the Graduate School as a major in economics, was recently chosen as recipient of the Delta Sigma Pi award for scholastic excellence during the entire four years of undergraduate study.

MAGRUDER ADDRESSES ROTARY CLUB ON STATE CONSTITUTION

Professor Augustin Magruder, of the Department of History and Government, spoke before the Rotary Club of Starkville on May 19. Professor Magruder dealt with the problem of revision of the Mississippi constitution.

MR. MARION T. LOFTIN
CAMPUS

THE SOCIAL SCIENCE BULLETIN
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